Science Advisory Council

Meeting Summary – Third Meeting
January 14, 2009
100 Cambridge St, Boston

Science Advisory Council members present for the meeting:

Priscilla Brooks, Conservation Law Foundation
Todd Callaghan, MA Office of Coastal Zone Management
Anamarija Frankic, Environmental, Earth and Ocean Sciences, UMass Boston
Kathryn Ford, Massachusetts Division of Marine Fisheries
Carlton Hunt, Battelle
Scott Krauss, New England Aquarium
Frank Muller-Karger, School of Marine Science and Technology, UMass Dartmouth
Bill Schwab, US Geological Survey, Woods Hole

Meeting Summary

John Weber opened the meeting at 1:00 PM by thanking the Council members present for their participation. He reviewed the meeting agenda and topics for discussion, including:

- Work group reports (Transportation, Navigation and Infrastructure, Regional Sediment Resource Management and Ocean Recreational and Cultural Services)
- update on the Baseline Assessment
- brainstorm ideas for a Science Plan

John Weber also provided an overview of the process as it moves from the end of the information gathering stage and into developing a draft plan during the next three months. The Ocean Management Plan will incorporate a "Science Plan" as a portion of the steps necessary to move the first iteration of the management plan ahead. The Science Council is asked to help create a robust plan of action that will address identified data gaps, assist in the preparation of the next version of the plan within the next five years, and identify what is reasonable to be accomplished in that time period.

John explained that the Council has three key roles in developing the science plan:

- data gaps and needs identified in the Work Group Reports and in the Baseline Assessment and how certain major issues such as habitat classification and climate change will be addressed in the next five years;
- methods of developing a Science Plan that will form the basis of the Ocean Management Plan (provide advice on how this may be done); and
- provide links on ongoing, existing science and/or ocean-related research plans (e.g. MIT Sea Grant)

John briefly explained that overall ocean management plan's draft goals and objectives will be submitted to the Ocean Advisory Commission at their next meeting on January 28. Once the

goals and objectives are approved by the Commission, they will be made available to the Council, possibly at the next meeting in February. The goals and objectives will be a vital guide for the structure of the science plan – what it should look like, what it should do.

John further explained that indicators will be developed later in the coming months and will be informed by the goals and objectives. The Council pointed out that extensive work has been done in the Northeast on indicator development, as well as the EPA and in relation to NEPs, and this work should be considered when developing indicators. Finally, as the ocean management plan is developed, the Council will be asked to provide input on the issue of balancing available science with the sophistication of proposed management measures.

Council Members were then informed that the next meeting will likely be help during the week of February 23, 2009. The main topic of this meeting will be beginning a discussion of the issues that should be discussed in the science plan.

This introduction was followed by a brief discussion from which the following points emerged:

- Will the science plan include a requirement to assess the work force and educational needs, since training requirements need to be addressed. *Answer: Potentially yes, since the resources needed for a successful science plan need to be addressed.*

Work Group Presentations (note that drafts of the work group reports are available on the EEA web site at www.mass.gov/eea).

1. Navigation, Transportation and Infrastructure Work Group

Brad Washburn, CZM, presented an overview of the work group report on Navigation, Transportation and Infrastructure. The group identified and ranked locations containing existing transportation, navigation and infrastructure uses and resources, utilizing all available data sources to produce a ranked siting map. Brad Washburn explained that some data which had been overlooked or not available at that time will be forthcoming, for example anchorage areas, pilot boarding areas, etc. The layers were then ranked in order of activity importance. Regarding recreational and commercial vessel patterns, Brad Washburn explained that the group is aiming to use the Vessel Tracking System that Stellwagen bank National Marine Sanctuary has to show high vessel concentration and navigational patterns. Moreover, the Massachusetts Marine Trades Association (MMTA) has agreed to conduct a survey on user groups to obtain data on high recreational vessel activity areas which will generate a new data layer.

Following this presentation, the Council made the following comments (responses to comments as appropriate provided in italics):

- It is important to have data quality assurance. For example, some pipelines or cables may be marked on maps but were never constructed or have been abandoned and never removed. Newer cables and/or pipelines are more reliable because mapping is required as part of the permitting process.
- Will data from work conducted by the Division of Marine Fisheries on commercial fishing be incorporated with this data, as an overlay? *Answer: The data from the various work group maps will be overlayed, including work done by the fisheries work group.*

Also, meetings with fishermen groups have provided more spatial and temporal information on fishing areas and activities. How all this information will be incorporated in a comprehensive spatial analysis that will inform management measures is being addressed.

- Do these maps included whale watching routes? *Answer: No, a different work group compiled whale watching data. Some data and information about where whales aggregate still needs to be incorporated. (It was suggested that EEA checks with Stellwagen Bank National Marine Sanctuary who have more information about whale watch vessels and spots where whales aggregates).*
- Will all digitized data be incorporated into one system? *Answer: All information will be included in MORIS and more metadata will be developed. All maps will be on a common grid for better spatial organization of information.*
- Will all the maps be available to the public during the planning process? A number of stakeholders have asked if they can access certain layers. *Answer: All maps will eventually be available to the public in MORIS although the exact date when that will be is still undecided as there is still a great deal of work to be done. There may be certain information that may not be releasedfor various reasons, such as horseshoe crab spawning data.*

A brief discussion followed about the reliability of vessels such as ferries using shipping lanes. Brad explained that the maps compiled by the work group show the recommended routes to be used by the ferries. The AIS data shows the real routes and the impacts of a potential shift in the lanes. More raw data is required. Shipping activities from the north do not usually use the lanes indicated on the maps and shipping routes of European traffic were not indicated. Carlton Hunt indicated that Stellwagen Bank National Marine Sanctuary have some data on vessel traffic from the north that may be helpful to this exercise. Frank Muller-Karger stressed the importance of incorporating real-time data and that the layers need to be updated regularly, a long-term goal of the Massachusetts Ocean Plan.

- The Council indicated that some of the wording in the tables was inconsistent with the report e.g. suitable vs. unsuitable (pg. 11), thereby leading to confusion. It was suggested that the term "clean-fill dumping area" should be substituted with "dredged fill material" (pg. 6).
- Does the environmental monitoring (buoys) include acoustic buoy systems as well? *Answer: Not sure. Will be checked.*
- Where the district Army Corps of Engineers consulted for guidance on these charts? *Answer: Yes.*
- A discussion on disposal sites followed, focusing on the siting and use of state disposal sites and whether ordinance disposal sites such as Nomans Island are still active or have been closed.
- With reference to Figure 4, was a map of non-suitable areas produced? Can the suitability ranking be clarified? It would be useful to know the reasoning behind the classification of suitability of zones. *Answer: High priority means not suitable for anything else other than shipping and navigation. At this scale, it is hard to indicate reasoning, although maps at a smaller scale can be created for that purpose.*

- A discussion followed and these points were made:

  - It may be possible to add a narrative to describe the criteria on which the suitability decisions were made
  - Some areas are used for navigation but a myriad of other things may occur.
  - Narrative or explanation would be helpful especially in light of the fact that some uses/activities may conflict more than others
  - Some areas contain immovable structures. Such zones need to be blacked out because conflicting uses cannot be allowed to take place in these zones.
  - Some form of reclassification may be needed to include areas that are infrastructure vs. non-infrastructure or limited, etc.

- Will this exercise also be conducted for federal waters? *Answer: Yes. We would need to add more information most of which is available and has been clipped for the purpose of this report.*
- Why were certain proposed projects included (such as tidal energy) while other were not (e.g. the town of Edgartown has received a permit for tidal energy)? *Answer: Those projects were already permitted.*

John invited anyone that feels that other projects should have been included to let him know via email.

2. Regional Sediment Resource Management

Bob Boeri, CZM, presented an overview of the report of the work group whose mission was to *"identify existing, specific spatial data that characterize the physical and chemical properties of sediment in the planning areas and/or that locate and quantify sediment types…..to assist with the siting and review of projects in the coastal zone that propose to remove and use sediment beneficially or whose location requires specific sediment types….to prioritize sediment uses and needs, assisting resource managers and the public in evaluating sediment management activities."*

Bob noted that there are a number of data gaps in this assessment. When analyzing sediment resource management, they excluded uses that may conflict. The work group assigned suitability rankings (limited, low, medium, high) to certain zones based such criteria as sediment types, hazardous material, depth of closure, etc. Bob noted that more data needs to be refined and incorporated in the report, for example lobster habitat (DMF), dredging projects, and data from Neptune LNG (in appropriate spatial scale). The work group also advised on the need to a statewide sediment regional transport data as well as an evaluation of contaminate sediments, wave modeling and to finalize the bottom and sub-bottom mapping.

The primary data sets were generated from the collaboration of USGS and CZM and from this mapping exercise the work group classified sediment as mud, sand, grace and hard bottom. Some caveats included limitations of plan area boundaries and the exclusion of other resources/uses. Ranking was based on a set of criteria to indicate the level of suitability for beneficial use, as described in detail in the report.

Following this presentation, the Council made the following comments (responses to comments as appropriate provided in italics):

- What is meant by "suitable"? This is not clear as there are various potential uses, such as mining. *Answer: Suitable for beneficial use. Mining is not the only use. For example, a site may not be exclusionary because it may be reused for disposal of dredged material, i.e. change of use. Therefore, from the reuse point of vies, area is of low or limited suitability but not exclusionary. Some sand disposal sites at the east end of Cape Cod Canal may be reused for disposal.*

- A discussion followed and these points were made:
    - Work group may need to reclassify dredged material disposal sites based on the criterion of possibility of reusing sediment.
    - Suitability needs to be open because the lack of a comprehensive assessment of sediment quality (e.g. chemical characterization), which will limit decisions on strict use.
    - The USGS (Chris Sherwood) has been developing some sediment movement models - wave interval off Scituate.
    - Site specific wave, wind and current data may be required of applicants for specific projects.

- Is the next step to obtain and incorporate contaminant data? *Answer: We need to get more information on contaminated sediments.*
- Not much can be done without information on contaminated sediments. *Answer: This is true for finer sediments (mud) but this is less crucial for coarser sediments (gravel, hard bottom).*
- The MWRA have provided some coastal assessment data for the Baseline Assessment and this will be passed on to Bob.
- A coupled model with atmospheric conditions and sediments should be considered. It is also difficult to conduct site specific analyses everywhere and so site specific analyses should be eventually nested into a statewide model. A number of factors affect sediment suspension such as wind, tides, stress on seabed etc, and such information should inform erosion and accretion patterns.
- Where is the interface with benthic factors/resources? *Answer: The next step is to start overlaying data from various work groups.*
- SPI has extensive sediment profile data including grain size that needs to be included, as well as hard bottom data compiled by the MWRA.

3. Ocean Recreational and Cultural Resources

Dennis Ducsik, CZM, explained that the report looked at how people experience the ocean. He added that the lack of available data posed some extra challenges as the work group tried to approach this research in as scientific and systematic way as possible in spite of tangible issues. The available data sets were divided into three categories:

- Cultural (marine archaeology, shipwrecks, etc)
- Vessel-based recreation (boating, kayaking, whale watching)
- Shore-based ocean viewing (~ 1000 public access sites in Massachusetts)

Recreational and cultural resource data for the plan area is sparse. There is also little information on the scenic value of the ocean and on the demographic of seascape viewers. The work group provided a potential method for conducting an "Ocean Viewing Study", described in more detail in the report.

Through the mapping exercise the work group tried to illustrate, at very low confidence levels, how to handle recreational and cultural values. The spatial data needed is however either non-existent or cannot be collected in the next year. It would be useful to have data on boat traffic, including sailing, kayaking, and others.

Following this presentation, the Council made the following comments (responses to comments as appropriate provided in italics):

- Concern was raised about the lack of recreational data on the water. It is important to know where recreational activities are taking place. A number of land-based surveys are inaccurate. There needs to be some groundtruthing of data and information provided by recreational boaters. Recommendations for these studies could be made since these are required for the ocean management plan. *Answer: The need to refine data on recreational behaviors is very clear.*
- Has archaeological data been included? *Answer: The BUAR records are not public. The information does not include a precisely mapped bottom.*
- There are about 3000 registered archaeological sites. There is a map of obstructions to navigation that may include shipwrecks.
- Should fishermen groups be consulted? *Answer: The planning team has been meeting with fishing groups.*
- The method used by Rhode Island in the case of trawlers may be applied. The fishermen can be told that if they do not provide the location of where they are fishing, we cannot make sure that those areas are avoided.
- Seafloor mapping has a third dimension that will provide information on the paleolandscape. Backscattering should indicate the presence of wrecks as well as seabed characteristics. This data is very well archived and available. The BUAR could obtain this data from USGS or even project proponents themselves.
- What is the elevation for vantage points in the map? *Answer: Sandy beach at high mean water.*
- Have you considered how to integrate the Native American connection to the Earth? *Answer: We have talked with tribal representatives and fishing communities. These groups should be considered as stakeholders.*
- Will the work group reports be part of the Baseline Assessment? *Answer: Yes, although they may become a technical annex. We have been including references to findings and conclusions as well as recommendations figures, maps, etc.*

John concluded this part of the meeting by asking the Council to submit comments on the work group reports to him by email by January 23rd.

Baseline Assessment

Todd Callaghan presented a brief update on the baseline assessment:

- Comments from the SAC and others have been incorporated
- The work group reports are being incorporated where applicable
- Final version will be available in the next few weeks

John asked the Council to provide comments on the baseline assessment by January 23rd; the assessment will incorporate these changes in the next version. He asked the Council for approval for circulating comments to all Council members.

- Are the habitat and fisheries reports going to be linked in some way: This should be addressed before the assessment is completed. *Answer: That will probably be done by bringing together members from both work groups.*

- Can we connect fisheries assessment with indicators? *Answer: Yes. In the short-term indicators will not be finalized but fisheries will be included.*

Kathryn then asked the Council whether the following changes should be made to the report:

1) Should a section on seafood quality be included following a suggestion by MWRA who are concerned with potential seafood toxins? *Comments:*
   - That section should be entitled chemical contaminants rather than seafood quality
   - It should not be a separate chapter but a 1 to 3 page summary with references
   - It is important to include biotoxins/microbiological contaminants as well.
   - If water, sediment and seafood quality are overlayed, a connection may be observed.

2) Should a section that discusses water quality changes resulting from climate change be included? *Comments:*
   - Not enough information or knowledge is available. May require a section that links to the watershed.
   - Sediments and HAB issues may also be included.
   - John suggested that there could be a small write up with a placeholder for future discussion under the science plan.

3) Since some things are under "biological" but may also be under "benthic", should there be a cross-reference between sections? *Answer: Yes.*

4) Should "biological feature" be removed altogether? *Answer: No, they should be included under the habitat section.*

Kathryn then explained that there will be some major edits and some redundant sections will be integrated (mining, shoreline protection, sediment transport, etc.).

- At what point shall the process begin to address the effects of sea level rise on shore infrastructure? What happens if we have to retreat? Although this is currently outsider the ocean plan area, it will eventually become a part of it. *Answer: Mining and shoreline protection are a part of that issue. Massachusetts does not have a specific policy statement regarding sand extraction for beach nourishment, and we are not sure how*

much this effort will push this issue. We should consider the possibility of sand mining for beach nourishment close to where it is needed.

- Does the section on climate change address estuarine flooding e.g. sea level rise effects on Buzzards Bay? An estuary will behave differently than a beach. It is important for the state to determine how different places react to sea level rise. This is important when thinking about where to retreat. *Answer: The assessment talks about temperature change, not sea level rise.*

- What about acidification? *Answer: Some data from MWRA and IPCC reports were used*.

- It was suggested that a chapter may be included that looks at immediate and long-term coastal vulnerability.

Kathryn then asked the Council for suggestions in discussing changes in wind patterns resulting from climate change. The Council emphasized the importance of pointing out uncertainties when discussing this issue.

- The Baseline Assessment should include trends and status of resources where possible rather than just a statement of facts; for example, fisheries data should be linked with populations. *Answer: Although that has not yet been done, there are numerous efforts to incorporate data and information. The most recent eelgrass data has need included and work is being done to look at trends.*

- Members of the Council pointed out that trends will be important in developing goals and objectives and critical to indicator development. Scott Krauss promised to obtain information about trends in marine mammal populations.

In conclusion, John made a clarification of the state open meeting law – one member of the SAC may discuss information with another Council member as long as the number of people did not form a quorum (five people).

Discussion on the Science Plan

John reiterated that it would be helpful for the Council to provide information regarding other plans being implemented (e.g. MIT Sea Grant). These entities should be ongoing and conducting research relevant to the planning area. Any information on the plans (link, contact information, brief description) should be mailed to John.

John also asked the Council for advice on the general process and rules of thumb used in developing a Science Plan. Some preliminary comments included the need to address the implications of trying to do science within state boundaries. Regional science plans are usually geographical or oceanographic, while in the case of the Massachusetts Ocean Plan the boundaries are politically driven.

It was also suggested that the Massachusetts Ocean Partnership has contacts and resources that could serve as a good place to start.

Finally, John asked Council to think of the substantive issues that need to be addressed in the Sceince Plan (e.g. habitat classification, climate changes) and to provide feedback by February 7.

Concluding remarks

John closed this meeting with the following reminders:

- Comments on the three work group reports and the Baseline Assessment by January 23, 2009.
- Feedback on the Science Plan by February 7, 2009.
- Ocean Advisory Commission meeting scheduled for January 28, 2009.
- Two public stakeholder meetings to raise awareness, increase public familiarity with the plan and conduct discussions on certain issues, scheduled in February 2009.
- The next SAC meeting is scheduled for the 4th week in February 2009.
- Final draft of the Baseline Assessment to be presented in May 2009.

The meeting adjourned at 4.00 pm.